Sedatives and Hypnotics in Stockholm: Social Factors and Kinds of Use

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ABSTRACT

Objectives. The aims of the study were (1) to estimate prevalence rates of current, regular, and long-term use of sedatives and hypnotics and the incidence of regular use in an urban population and (2) to study the association between such use of drugs and sociodemographic factors, symptoms of disease, and alcohol consumption.

Methods. Data on drug use in a random sample of 6217 adults in Stockholm County were analyzed with logistic regression.

Results. The prevalence rate for current use of sedatives or hypnotics was 12.8% among men and 18.6% among women; the rate for regular use was 3.7% among males and 4.7% among females. The odds ratio for current use increased with age and was higher among unemployed persons and disability pensioners, high consumers of alcohol, persons with an increased level of symptoms, and widows. More than 25% of the persons who had used sedatives or hypnotics during the previous 2 weeks were regular users 6 months later. For persons aged 25 through 64 years, the annual incidence rate was 1.8% among men and 2.7% among women.

Conclusions. The comparatively low incidence and high prevalence of regular use implies that long-term use of sedatives and hypnotics is common. (*Am J Public Health.* 1994;84: 242–246)

Introduction

The use of sedative and hypnotic drugs has increased in Europe since World War II and peaked in the early 1970s.[1] In Sweden and elsewhere, benzodiazepines are the most frequently used drugs,[2] at least in part because of their beneficial clinical effects and low toxicity.[1,3] In a 1981 study including the United States and 10 Western European countries, Balter found a prevalence rate of 8.6% in Sweden for use of sedative drugs, once or repeatedly; the prevalence rate for the United States was estimated at 12.9%.[4] However, several reports have stressed a risk of dependence in long-term benzodiazepine maintenance.[5–7]

Studies on the use of sedative and hypnotic drugs have revealed higher than average prevalence rates among divorced, separated, or widowed persons and elderly persons,[8–10] and low rates among the best educated.[11] It has also been shown that concomitant use of alcohol and sedatives or hypnotics is common.[12,13] Thus, there seem to be associations between social factors, alcohol use, and use of sedatives and hypnotics. However, it is not known whether there are any differences in these associations between current and regular users. This is an important issue in an analysis of the risk of dependence, and it carries implications about the question of proper vs unnecessary use.

In the present study we considered the following questions:

1. What is the prevalence of current use, regular use, and long-term use, and what is the incidence of regular use?

2. Is the social pattern and the connection to alcohol consumption different for current users and regular users?

Methods

The Health of the Population Study[14] was a cross-sectional health survey of random samples of 450 inhabitants aged 18 years and older in each of the catchment areas of 14 primary care teams at four primary health care districts in Stockholm County, which has a total of 1.5 million inhabitants. The proportion of blue-collar workers in the population in the study area was 36%; the proportion of subjects aged 65 years and older was 16%; and the proportion of unmarried persons was 37%. For Stockholm County as a whole, these proportions were 32%, 19%, and 33%, respectively.[15] Our analyses are based on a net sample of 6217 subjects (with due corrections for deaths, moves, etc.). A total of 4094 subjects (65.9%) responded to a mail questionnaire followed by up to three reminders, in April through June 1984. The second reminder to main immigrant groups included a questionnaire translated into their respective native tongues. A health examination (directed to the whole sample group) was conducted between September 1984 and March 1985 by district nurses and nurses' assistants specially trained for the purpose. The average time between the investigators' receipt of the completed questionnaire and the health examination was about 6 months

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(mean time, 172 days; range, 116–228 days). Altogether, 3801 subjects (61.4%) attended the health examination; 2652 subjects aged 18 through 64 years participated in both the questionnaire study and the health examination.

Use of Sedatives and Hypnotics

The questionnaire contained questions about use during the previous 2 weeks of "drugs . . . for daytime use (i.e., Librium, Valium, Stesolid, Apozepam, and Sobril)" (sedatives) and "drugs . . . for nighttime use" (hypnotics). The reply alternatives were "No," "Yes, occasionally," "Yes, daily or almost daily," and "Do not know." In the health examination, subjects aged 18 through 64 years were asked about sedatives or hypnotics they had used at least 3 days a week during the previous 3 months. Since the name of the drug was stated, a separate group of benzodiazepine users could be created. The questionnaire data thus allowed us to estimate prevalence rates of current use, while the health examination formed the basis for the estimation of regular use of sedatives and hypnotics—and, separately, benzodiazepines—among persons aged 18 through 64 years. The prevalence rate of long-term use, that is, use of sedatives or hypnotics indicated in both investigations, was also calculated, as well as the incidence rate (the rate for those who stated that they used sedative or hypnotic drugs at the health examination but who did not report such use in the questionnaire).

Socioeconomic Status

Socioeconomic status was analyzed for all persons younger than 65 years, which is the retirement age in Sweden. The unemployed formed one category and the disability pensioners formed another. The remaining persons (approximately 90%) who stated an occupation were classified into various groups according to the Swedish socioeconomic classification system used in censuses as a measure of social class; the system is based on the type and extent of education generally needed for various occupations.[16] In the statistical analyses, the blue-collar workers were chosen as the reference category.

Marital Status

The marital status categories were unmarried (never married), married (reference group), divorced, and widowed.

Measures of Alcohol Consumption

The reported customary consumption of liquor, fortified wine, table wine,

strong beer (5.5% alcohol by volume) and ordinary beer (3.5% alcohol by volume) was converted to grams 100% ethanol, using data on the average content of the various alcoholic beverages in 1984 (Göran Christensen, the Alcohol Retail Monopoly, personal communication, February 1984). The cut-off point for high consumption was 35 g per day for men and 25 g for women, consistent with recent recommendations.[17–19]

Symptoms

A dichotomized measure was constructed from the answers to questions about frequency of symptoms ("Never," "Seldom," "Sometimes," "Often," scored 1, 2, 3, and 4, respectively) covering 22 somatic, psychological, or psychosomatic entities. These symptoms were difficulty in sleeping, difficulty in falling asleep, poor appetite, heartburn, diarrhea, constipation, epigastralgia, flatulence, headache, palpitations, breathing problems, vertigo, depression, restlessness, anxiety, tiredness, indolence, muscle tension, breast pain, arthralgia, coughing, and incontinence. The measure for the 20% of subjects with the highest score (43–76) was coded as 1, and the measure for the others was coded as 0.

Analyses

The prevalence rates for current and regular use of sedatives and hypnotics were calculated first. Then multivariate logistic regression analyses were conducted for subjects aged 25 through 64 years for whom information about these two measures was available. The age category 25 through 44 years was used as the reference category. (Because there were few subjects aged 18 through 24 years, some of whom were not employed, this age group was excluded from the multivariate analyses.) The odds ratio, with 95% confidence intervals, was used as a measure of relative risk.[20]

Results

Current Use

Use of sedatives, hypnotics, or both during the previous 2 weeks was more common among women than men (the overall rate was 16%), increased with age, and was similar in all socioeconomic groups. The prevalence rates were lower for sedative use than for the use of hypnotics (Table 1). Drug use was most common among subjects in the following categories: disability pensioners of both

sexes, unemployed women, self-employed men, and divorced or widowed persons. Prevalence rates were generally low among white-collar employees at medium and high levels. Subjects with a high level of symptoms had markedly higher prevalence rates than did those with few symptoms; high consumers of alcohol more frequently reported use of drugs than did others. Only three men and seven women aged 18 through 24 years had used sedative or hypnotic drugs during the previous 2 weeks, and only three subjects in this age group were regular users.

Regular Use

The prevalence rates for use of sedatives or hypnotics at least 3 days a week for a period of at least 3 months were about 25% as high as the rates for use during the 2 weeks before the subject answered the questionnaire (Tables 1 and 2). About 75% of the regular users took benzodiazepines. The socioeconomic distribution was generally similar for regular use and for current use, with the exception of self-employed men and unmarried persons; both categories had lower rates of regular use. There were no users among widowed men and few among self-employed men; however, there were few subjects in these categories.

The average weekly alcohol consumption among current sedative or hypnotic drug users aged 25 through 64 years was 200 g of 100% alcohol for men and 72 g for women, compared with 109 g and 49 g, respectively, among nonusers.

Long-Term Use

The prevalence rate of long-term use (6 months or more) of sedatives or hypnotics among current users aged 25 through 64 years was 26% (24 of 92) for men and 28% (44 of 156) for women. If only benzodiazepines were considered, the proportions were 16% and 18%, respectively. Of the regular users, 32 men (75%) and 44 women (76%) were long-term users. Of those who responded to the questionnaire, 2.6% of the men and 4.0% of the women admitted long-term use. The socioeconomic pattern of long-term use was similar to the pattern of both current and regular use. The annual incidence rate of regular use was 1.8% for men and 2.7% for women.

Multivariate Logistic Regression Analyses

Table 3 shows clear associations between certain social factors and use of sedatives or hypnotics; in some instances,

TABLE 1—Prevalence (%) of Use of Sedatives or Hypnotics during the 2 Weeks before Receipt of Mail Questionnaire

	Men (n = 1856)			Women (n = 2238)		
	Sedatives	Hypnotics	Either	Sedatives	Hypnotics	Either
Age, y						
18–24	0.0	1.7	1.7	1.6	1.9	2.7
25–44	3.9	5.5	7.1	5.4	6.5	8.9
45–64	7.7	13.9	16.0	10.7	18.9	22.2
65–74	11.4	23.5	28.8	16.4	35.0	39.8
75+	18.0	38.1	40.3	20.3	48.5	52.1
Work status						
Disability pension[a]	26.4	38.9	44.4	25.0	33.8	40.6
Unemployed[a]	6.3	9.4	12.5	16.7	16.0	28.0
Blue-collar[a]	3.4	6.5	7.2	4.6	6.7	8.7
White-collar, low level[a]	3.5	4.9	5.7	7.0	11.4	13.6
White-collar, middle/high levels[a]	2.6	5.6	7.2	4.6	8.0	10.3
Self-employed[a]	10.1	11.5	16.5	11.4	4.6	13.6
Marital status						
Unmarried	3.9	7.1	8.0	4.8	8.4	10.2
Married	6.2	11.9	14.8	7.5	13.3	16.3
Divorced	10.3	13.4	16.1	13.1	21.0	23.4
Widowed	11.8	35.3	36.1	19.0	40.3	46.6
Symptoms						
High level	16.4	30.0	35.4	21.1	29.0	35.7
Low level	2.7	5.6	6.7	3.4	7.8	9.4
Alcohol consumption						
High	8.4	21.1	22.2	18.6	20.5	27.3
Not high	5.6	9.7	11.9	8.1	15.4	18.2
Mean	5.9	10.7	12.8	8.6	15.7	18.6

[a]Aged 18 through 64 years.

TABLE 2—Prevalence (%) of Use of Sedatives or Hypnotics at Least Three Times per Week during the 3 Months before Health Examination

	Men (n = 1354)		Women (n = 1658)	
	All Sedatives/ Hypnotics	Benzo- diazepines	All Sedatives/ Hypnotics	Benzo- diazepines
Age, y				
18–24	0.7	0.7	0.5	0.0
25–44	3.4	1.8	3.3	2.0
45–64	5.1	3.4	8.7	5.3
Work status				
Disability pension	14.3	12.9	21.6	14.4
Unemployed	9.5	0.0	12.0	8.0
Blue-collar	3.0	1.4	3.1	1.9
White-collar, low level	4.3	3.2	5.8	3.3
White-collar, middle/high levels	2.5	0.8	1.2	0.6
Self-employed	2.5	2.5	0.0	0.0
Marital status				
Unmarried	4.2	1.9	3.2	1.0
Married	3.0	1.9	3.9	2.4
Divorced	9.3	6.5	8.5	6.1
Widowed	0.0	0.0	12.3	8.8
Symptoms				
High level	0.0	0.0	27.6	18.5
Low level	2.9	1.8	3.8	2.0
Alcohol consumption				
High	4.7	1.9	7.8	5.9
Not high	3.2	1.9	4.6	2.6
Mean	3.7	2.2	4.7	2.8

Note. Data are for subjects aged 18 through 64 years.

these associations are statistically significant. For current use among men, the odds ratios were significantly increased among the unemployed, disability pensioners, the self-employed, high alcohol consumers, and those with various symptoms. For current use among women, the odds ratios were significantly increased among those aged 45 through 54 years, low-level white-collar employees, widows, high consumers of alcohol, and those with various symptoms. In separate analyses of current users (excluding persons who were also regular users), a similar pattern was found. The most pronounced difference was the markedly increased odds ratio (4.41) for men with high alcohol consumption (95% confidence interval = 2.28, 8.55).

Men who were unemployed, disability pensioners, unmarried, or divorced or who showed symptoms had statistically significantly increased odds ratios for regular use of sedatives and hypnotics (Table 3). Among women, the odds ratios were statistically significantly increased for those aged 55 through 64 years and for those with symptoms. Thus we found both similarities and differences by gender, as well as differences in the sociodemographic pattern for regular use compared with current use. For men, odds ratios for being unmarried or divorced were statistically significantly increased only for regular use, and odds ratios for high alcohol consumption were increased only for current use. For women, the odds ratios were not increased for those who were unmarried or divorced with current or regular use of sedatives or hypnotics.

Discussion

The prevalence rate of current use of sedatives or hypnotics was 12.8% for men and 18.6% for women; these rates are higher than those found in some other surveys, including one from Sweden.[21] One interview survey of a random sample of the population indicated a prevalence rate of 3.6% for use of sedatives and 5% for hypnotics "occasionally or more frequently" during a previous 14-day period in Stockholm County in 1988[22]; another interview survey found a prevalence rate of 5.6% for use of sedatives and 5.4% for hypnotics.[21] Both surveys had an upper age limit of 74 years. If we apply this upper age limit to the Health of the Population Study sample, the prevalence rate of sedative use is reduced to 6.7% (5.4% for men and 7.7% for women) and that of hypnotic use is reduced to 11.2% (9.7% for men and

13% for women), and the prevalence rates are 11.7% for men and 15.8% for women for use of either type of drug. The higher prevalence rates of current use, especially of hypnotics, among those who responded to the questionnaire could be due partly to a reduced reluctance to admit such use in a questionnaire compared with a personal interview. It has been claimed that sensitive items usually attain a higher prevalence rate in questionnaires than in interviews.[23] It is therefore possible that underreporting contributed to a reduction of the prevalence rates found at the health examination. Another explanation could be that the use of sedatives and hypnotics actually was higher in the investigated areas in Stockholm County than in other areas.

We lack information about the use of sedatives and hypnotics among persons who did not participate in the study. However, because the prevalence in the Health of the Population Study sample for inpatient care with a diagnosis of alcoholism was two to three times higher among the nonparticipants than among the participants,[19] and because we demonstrated an association between high alcohol consumption and current use of sedatives or hypnotics in the present study, we believe that the prevalence of such use is also higher among the nonparticipants.

The increase in prevalence of use with age is in agreement with observations made by others.[24-27] When approximately 20% of persons aged 75 years and older use sedatives and approximately 40% use hypnotics, it is questionable whether appropriate indications are always present. Results of other studies indicate that use of sedatives and hypnotics implies an increased risk for falls and other accidents.[28]

A considerable variation in use of sedatives and hypnotics with socioeconomic status[13] and education[29] has been reported. We found a greatly increased prevalence of use among disability pensioners and unemployed persons of both sexes (Table 3). Being unemployed or on a disability pension is sometimes not just a short-term problem; it may have a long-term impact, especially on disability pensioners, who may feel they will never again take part in the working life. It is reasonable to believe that being unemployed or on a disability pension may be associated with a number of psychological problems caused by, for instance, social isolation. However, drug use in itself may be the reason for unemployment or a disability pension. There were increased odds ratios for current use among female

| | Current Use[a] | | Regular Use[b] | |
| | Men | Women | Men | Women |
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age, y				
45–54	1.29 (0.75, 2.19)	1.17 (0.74, 1.85)	2.33 (0.38, 3.70)	1.96 (1.22, 7.36)
55–64	1.27 (0.73, 2.19)	2.07 (1.37, 3.13)	1.18 (0.83, 6.57)	2.99 (0.77, 4.97)
Work status				
Unemployed/disability pension	6.10 (3.20, 11.61)	3.25 (1.83, 5.77)	7.42 (2.02, 27.24)	2.98 (1.05, 8.48)
White-collar, low level	1.26 (0.67, 2.36)	1.58 (1.04, 2.41)	1.38 (0.38, 4.98)	1.66 (0.71, 3.90)
White-collar, middle/high level	1.56 (0.93, 2.63)	1.50 (0.93, 2.43)	1.20 (0.38, 3.76)	0.36 (0.08, 1.73)
Self-employed	3.33 (1.61, 6.89)	2.00 (0.79, 5.09)	1.51 (0.29, 7.84)	. . .
Marital status				
Unmarried	0.78 (0.48, 1.26)	0.94 (0.61, 1.45)	3.49 (1.33, 9.15)	0.82 (0.28, 2.38)
Divorced	1.14 (0.62, 2.10)	1.48 (0.96, 2.28)	4.09 (1.25, 13.40)	1.21 (0.48, 3.04)
Widowed	1.26 (0.67, 2.36)	5.61 (3.24, 9.72)	. . .	. . .
High alcohol consumption	2.14 (1.24, 3.70)	2.31 (1.17, 4.55)	0.75 (0.21, 2.74)	1.19 (0.24, 5.83)
With symptoms	7.30 (4.76, 11.18)	4.72 (3.37, 6.62)	5.97 (2.57, 13.86)	7.56 (3.59, 15.94)

TABLE 3—Association between Sociodemographic Factors and Current and Regular Use of Sedatives or Hypnotics

Note. Data are from a multiple logistic regression analysis of data for subjects aged 25 through 64 years; the age group 25 through 44 years served as the reference category. OR = odds ratio; CI = confidence interval.
[a]Use during the previous 2 weeks.
[b]Use at least 3 days a week for at least 3 months.

low-level white-collar employees, who constitute the second largest category of gainfully employed women. One possible partial explanation is that a considerable number of women with limited work experience outside the home entered the work force; some may have received inappropriate, monotonous, or stressful jobs, developed (psychosomatic) symptoms, and subsequently been prescribed sedatives or hypnotics by physicians. We found increased odds ratios for regular use among divorced and unmarried men and for current use among widows, findings that have been reported elsewhere.[29] Other studies have shown that divorced persons have higher levels of psychic distress.[7,29] Widowed persons are more likely to suffer from depression.[30] These factors may contribute to increased odds ratios, but they do not explain the sex differences.

The markedly increased odds ratio for current, but not regular, use of sedatives or hypnotics in subjects of both sexes with high alcohol consumption may indicate that some high consumers occasionally use these drugs as an alternative to alcohol to achieve relaxation and sleep, maybe as a consequence of heavy drinking.

The distinction between current and regular use is somewhat arbitrary. No information is available on use prior to the

period covered by the questionnaire or in between the two measurement points. It may very well be that some of the current users also used sedatives or hypnotics regularly or in periods preceding the presentation of the questionnaire.

The prevalence rate of regular use (at least 3 days per week during the previous 3 months), 3.7% in men and 4.7% in women, is about one-fourth the rate of current use. At the health examination about 6 months after the questionnaire was administered, 27% of the current users were still using the drugs, that is, were long-term users. Our measure of regular use is a clear indication of long-term use, inasmuch as 75% of the regular users were long-term users. In a prospective study in Jämtland County, 15% of the persons who were prescribed benzodiazepines for the first time in 1976 were regular users 10 years later (G. Boethius, MD, oral communication, October 1989), and 1.6% of men and 2.9% of women were regular users of psychoactive drugs in an analysis of four random samples of the Swedish population from 1975 to 1981.[31] As the follow-up period was longer in the former study and the latter excluded hypnotics, the present results seem to be roughly in concordance with the results of these two studies and with those of studies from other countries in which investigators

found that 10% to 18% of benzodiazepine users continued their use for 4 months or more.[32,33]

The annual incidence rates of regular use (1.8% for men and 2.7% for women) might be considered fairly modest. The much higher prevalence rates constitute an important indication that many people use these drugs for long periods of time, contrary to recommendations.[3] It should be kept in mind in this context that the incidence rates are based on a limited number of new cases and consequently have a low degree of precision.

The multivariate analyses showed that some of the independent factors related to current use were the same for both regular and long-term users, a finding that increases the credibility of the results.

The marked association between a high level of symptoms and current and regular use of sedatives or hypnotics among persons of both sexes in the working age groups is in agreement with the findings of other studies[8,14,29] and may be regarded as a reflection of a rational use of these drugs. Conversely, it might be argued that the high proportion of users with symptoms indicates insufficient effects of the sedative and hypnotic drugs. Some persons in this category should probably receive other treatment in addition to or instead of sedatives or hypnotics, and others might do as well or better without sedatives and hypnotics. It is regrettable that we do not know what proportion of users did not actually improve, got worse, or did not change after they started to use sedative and hypnotic drugs. This information is a prerequisite for a judgment of the extent of improper use.

Since there are hardly any documented therapeutic long-term effects of benzodiazepines[34]—the dominant subgroup of sedatives and hypnotics whose use can lead to dependence—and with the well-established risk of dependence in long-term use, the proportion of 27% long-term users among current users in this study is an alarmingly high figure. It indicates that a substantial minority of current "temporary" users continue to use sedatives or hypnotics for longer periods than are suitable for effective sedative or hypnotic results. Certain general principles for prescribing sedatives and hypnotics[35] can be suggested: (1) Use nonpharmacological means of promoting sleep whenever possible and reassure patients that 5 to 6 hours' sleep per night is normal. (2) Avoid prescribing benzodiazepines— especially for the elderly—and try to withdraw benzodiazepines as soon as possible. (3) As a general rule, prescribe sedatives and hypnotics only for short periods. (4) Warn patients of the risk of dependence.

The physician should also consider the important social factors associated with use of sedatives and hypnotics— apart from age and symptoms—and should be aware that temporary use of such drugs may be an indicator of at least transitory high alcohol consumption. □

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